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Sec. A
Vol. 49
Index

ROBERT KENLEY CLARK

PHYSICS ABSTRACTS

SECTION A

of

SCIENCE ABSTRACTS

SECTION A, PHYSICS

SECTION B, ELECTRICAL ENGINEERING

Edited and Issued Monthly by

THE INSTITUTION OF ELECTRICAL ENGINEERS

In Association with

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THE AMERICAN PHYSICAL SOCIETY

THE AMERICAN
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LIST OF JOURNALS

† indicates Journals from which all articles are normally abstracted.
* indicates Journals not received regularly.

*Acta Math., Uppsala	Acta Mathematica. Uppsala, Sweden.
Acta Soc. Sci. Fennicae	Acta Societas Scientiarum Fennicae. Helsingfors.
*Aeroplane	Aeroplane. London.
*Agric. Engng	Agricultural Engineering. London.
*Aircr. Engng	Aircraft Engineering. London.
*Aircr. Prod.	Aircraft Production. London.
*Alsthom Bull. Tech.	Alsthom Bulletin Technique. Paris.
Alta Frequenza	Alta Frequenza. Turin, Italy.
Amer. J. Phys.	American Journal of Physics. New York.
Amer. J. Roentgenol. and Radium Ther.	American Journal of Roentgenology and Radium Therapy. Springfield, Ill.
Amer. J. Sci.	American Journal of Science. New Haven, Conn.
Amer. Min.	American Mineralogist. Ann Arbor, Mich.
Ann. Acad. Sci. Fenn.	Annales Academiae Scientiarum Fennicae. Helsingfors.
*Ann. Fac. Sci. Toulouse	Annales de la Faculté des Sciences de Toulouse pour les Sciences Mathematiques et les Sciences Physiques. Paris.
Ann. Harv. Coll. Obs.	Annals of the Harvard College Observatory. Cambridge, Mass.
Ann. N.Y. Acad. Sci.	Annals of the New York Academy of Science. New York.
*Ann. Phys., Lpz.	Annalen der Physik. Leipzig.
Ann. Phys., Paris	Annales de Physique. Paris.
*Ann. Radiodiffusion	Annales de Radiodiffusion. Paris.
Ann. Radioélectricité	Annales de Radioélectricité. Paris.
Ann. Soc. Sci. Brux.	Annales de la Société Scientifique de Bruxelles. Louvain.
Ann. Solar Phys. Obs.	Annals of the Solar Physics Observatory. Cambridge.
A.R. Nat. Res. Coun. Can.	Annual Report of the National Research Council of Canada. Ottawa.
*Arch. Elektrotech.	Archiv für Elektrotechnik. Berlin.
*Arch. Math. Naturv.	Archiv for Mathematik og Naturvidenskab. Oslo.
Arch. Sci. Phys. Nat.	Archives des Sciences Physiques et Naturelles. Geneva.
*Arch. tech. Messen	Archiv für technisches Messen. Münich.
*Arch. Wärmew.	Archiv für Wärmewirtschaft und Dampfkesselwesen. Berlin.
Ark. Kemi Min. Geol.	Arkiv för Kemi, Mineralogi och Geologi. Stockholm.
Ark. Mat. Astr. Fys.	Arkiv för Matematik Astronomi och Fysik. Stockholm and London.
Asea J.	ASEA Journal. Västerås, Sweden; and London.
*Astr. Mitt., Zürich	Astronomische Mitteilungen. Zürich.
Astrophys. J.	Astrophysical Journal. Chicago.
Atti. Accad. Torino	Atti. della R. Accademia delle Scienze, Torino. Turin.
*Aust. J. Exp. Biol. Med. Sci.	Australian Journal of Experimental Biology and Medical Science. Adelaide, Australia.
*Aust. J. Sci.	Australian Journal of Science. Sydney.
*Auto Engr	Automobile Engineer. London.
*Aviation	Aviation. New York.
A.W.A. Tech. Rev. (Amal. Wireless Aust.)	Amalgamated Wireless (Australasia) Technical Review. Sydney.
Beama J.	Beama Journal. London.
*Bell Lab. Rec.	Bell Laboratories Record. New York.
Bell Syst. Tech. J.	Bell System Technical Journal. New York.
*Bell Teleph. Mag.	Bell Telephone Magazine. New York.
*BIOS Rep. (H.M. Station. Off.; U.S. Dep. Comm.)	British Intelligence Objectives Sub-committee Report. H.M. Stationery Office, London; U.S. Department of Commerce Washington, D.C.
*Blast. Furn.	Blast Furnace and Steel Plant. Pittsburgh.
*Brit. Govt. Dep. Elect. Spec.	Government Department Electrical Specification. London.
Brit. J. Radiol.	British Journal of Radiology. London.
Brit. Med. Bull.	British Medical Bulletin. London.
*Brit. Plast.	British Plastics. London.
*Brit. Stand.	British Standard. London.
Brown Boveri Rev.	Brown Boveri Review. London.
BTH Activ. [Brit. Thomson-Houston]	BTH Activities. Rugby.
Bull. Acad. Sci. URSS., Sér. Phys.	Bulletin de l'Académie des Sciences de l'URSS. Moscow.
Bull. Amer. Met. Soc.	Bulletin of the American Meteorological Society. Milton, Mass.
*Bull. Amer. Soc. Test. Mater.	Bulletin of the American Society for Testing Materials. Philadelphia, Pa.
Bull. Ass. Ing. Élect. Montefiore	Bulletin de l'Association des Ingenieurs Électriciens sortis de l'Institut Electrotechnique Montefiore. Liège, Belgium.
Bull. Ass. Suisse Élect.	Bulletin de l'Association Suisse des Électriciens. Zürich.
Bull. Astr., Paris	Bulletin Astronomique. Paris.
Bull. Calcutta Math. Soc.	Bulletin of the Calcutta Mathematical Society. Calcutta and Cambridge.
*Bull. Geol. Soc. Amer.	Bulletin of the Geological Society of America. Rochester, N.Y.
Bull. Instn Radio Engrs, Aust.	Bulletin of the Institution of Radio Engineers, Australia. Sydney.
Bull. Math. Biophys.	Bulletin of Mathematical Biophysics. Chicago.
Bull. Oerlikon	Bulletin Oerlikon. London.
Bull. Seism. Soc. Amer.	Bulletin of the Seismological Society of America. Berkeley, Cal.
Bull. Soc. Belge Élect.	Bulletin de la Société Belge des Électriciens. Marcinelle, Belgium.
Bull. Soc. Franç. Élect.	Bulletin de la Société Française des Électriciens. Paris.

Bull. Univ. Ill. Engng Exp. Sta.	Bulletin of the University of Illinois Engineering Experiment Station. Urbana, Ill.
Bull. U.S Bur. Min.	Bulletin of the United States Bureau of Mines. Washington, D.C.
Canad. J. Res.	Canadian Journal of Research. Ottawa.
C.E.R.C.A.	Commonwealth and Empire Conference on Radio for Civil Aviation. London.
Chem. Age, Lond.	Chemical Age. London.
Chem. and Ind.	Chemistry and Industry. London.
Chem. Metall. Engng	Chemical and Metallurgical Engineering. New York.
Chin. J. Phys.	Chinese Journal of Physics. Kunming.
CIOS Rep. (H.M. Station. Off.; U.S. Dep. Comm.)	Combined Intelligence Objectives Sub-Committee Report. H.M. Stationery Office, London; U.S. Department of Commerce, Washington, D.C.
Circ. Univ. Ill. Engng Exp. Sta.	Circulars of the University of Illinois Engineering Experiment Station. Urbana, Ill.
Circ. U.S. Bur. Stand.	Circular of the United States Bureau of Standards. Washington, D.C.
Colliery Guard.	Colliery Guardian. London.
Colo. Sch. Min. Quart.	Colorado School of Mines Quarterly. Denver, Col.
Comment. Phys. Math., Helsingf.	Commentationes Physico-Mathematicae (Societas Scientiarum Fennica). Helsingfors.
Comment. Pont. Acad. Sci.	Commentationes. Pontificia Academia Scientiarum. Città del Vaticano, Rome.
Commun. K. Onnes Lab. Leiden	Communications of the Kamerlingh Onnes Laboratory of the University of Leiden. Leiden, Holland.
Commun. Lab. Inst. Opt., Paris	Communications des Laboratories de l'Institut d'Optique. Paris.
Commun. Rev.	Communication Review. Sydney.
Communications	Communications. New York.
Compr. Air Engng	Compressed Air Engineering. London.
C.R. Acad. Sci., Paris	Compte Rendu Hebdomadaire des Séances de l'Académie des Sciences. Paris.
C.R. Acad. Sci. URSS.	Comptes Rendus de l'Académie des Sciences de l'URSS. Moscow.
C.R. Soc. Phys. Hist. Nat. Genève	Compte Rendu des Séances de la Société de Physiques d'Histoire Naturelle de Genève. Geneva.
Curr. Sci.	Current Science. Bangalore.
Diesel Rly Tract. (Suppl. Rly Gaz.)	Diesel Railway Traction. Supplement to Railway Gazette and Railway News. London.
Distrib. Elect.	Distribution of Electricity. London.
Drop Forger	Drop Forger. Birmingham.
Dyna	Dyna. Bilbao.
Econ. Pap. U.S. Bur. Min.	Economic Papers of the Bureau of Mines. Washington, D.C.
Econ. Proc. R. Dublin Soc.	Economic Proceedings of the Royal Dublin Society. Dublin and London.
Edison Elect. Inst. Bull.	Edison Electric Institute Bulletin. Philadelphia, Pa.
Elect. Commun.	Electrical Communication. New York and London.
Elect. Engng, N.Y.	Electrical Engineering. New York.
Elect. Ind.	Electrical Industries. Maidenhead, Berks.
Elect. Rev., Lond.	Electrical Review. London.
Elect. Superv.	Electrical Supervisor. New Barnet, Herts., England.
Elect. Times	Electrical Times. London.
Elect. World, N.Y.	Electrical World. New York and London.
Electrician	Electrician. London.
Électricité	Électricité. Paris.
Electro-techniek	Electro-techniek. The Hague.
Electronic Engng	Electronic Engineering. London.
Electronics	Electronics. New York and London.
Electronics Forum	Electronics Forum. London.
Elekt. Nachr.-Tech. [ENT]	Elektrische Nachrichten-Technik. Berlin.
Elektrichestvo	Elektrichestvo. Moscow.
Elektrotech. u. Maschinenb. [EuM]	Elektrotechnik und Maschinenbau. Vienna.
Elektrotech. Obz.	Elektrotechnicky Obzor. Prague.
Elektrotech. Z. [ETZ]	Elektrotechnische Zeitschrift. Berlin.
Elektrotek. Tidsskr.	Elektroteknisk Tidsskrift. Copenhagen.
Elektroteknikeren	Elektroteknikeren. Copenhagen.
Endeavour	Endeavour. London.
Engineer, Lond.	Engineer. London.
Engineering	Engineering. London.
Engl. Elect. J.	The English Electric Journal. Stafford, England.
Engng Boil. Ho. Rev.	Engineering and Boiler House Review. London.
Engng Bull.	Engineering Bulletin. London
Engng J., Montreal	The Engineering Journal. Montreal.
Engng Mater.	Engineering Materials. London.
Ericsson Rev.	Ericsson Review. Stockholm.
Ericsson Tech.	Ericsson Technics. Stockholm.
Escher Wyss News	Escher Wyss News. Zürich.
Experientia	Experientia. Basle.
FIAT Rep. (H.M. Station. Off.; U.S. Dep. Comm.)	Field Information Agency Technical Report. H.M. Stationery Office, London; U.S. Department of Commerce, Washington, D.C.
Fiskeridirek. Skr.	Fiskeridirektoratets Skrifter. Bergen.
Flight	Flight. London.
For. Prod. Res. Spec. Rep. (D.S.I.R. Publ., Lond.)	Forest Products Research Special Report. Department of Scientific and Industrial Research, London.
Fuel Econ. Rev.	Fuel Economy Review. London.
Gas Oil Pwr	Gas and Oil Power. Lockerbie, Dumfries.

*Gas u. Wasserfach	Gas u. Wasserfach. Münich.
Gazeta de Matemática	Gazeta de Matemática. Lisbon.
G.E.C.Jl [Gen. Elect. Co.]	G.E.C. Journal. London.
Gen. Elect. Rev.	General Electric Review. Schenectady, N.Y., and London.
*Gen. Radio Exp.	General Radio Experimenter. Cambridge, Mass.
Geol. Mag., Lond.	The Geological Magazine. Hertford, England.
Geophysics	Geophysics. Austin, Texas.
*Giesserei.	Giesserei. Zeitschr. f.d. Wirtschaft u. Technik d. Giessereiwesens. Münich.
Handb. U.S. Bur. Stand.	Handbook of the United States Bureau of Standards. Washington, D.C.
Helv. Phys. Acta	Helvetica Physica Acta. Basle.
*Hochfrequenztech. u. Elektroakust.	Hochfrequenztechnik und Elektroakustik. Leipzig.
Illum. Engng, N.Y.	Illuminating Engineering. Baltimore, Md.
Indian J. Phys.	Indian Journal of Physics and Proceedings of the Indian Association for the Cultivation of Science. Calcutta.
*Industr. Chem.	Industrial Chemist. London.
Industr. Diamond Rev.	Industrial Diamond Review. London.
Industr. Engng Chem.	Industrial and Engineering Chemistry. Washington, D.C.
Industr. Engng Chem. (Analyt. Edit.)	Industrial and Engineering Chemistry (Analytical Edition). Washington, D.C.
*Inform. Tech. Charmilles	Informations Techniques Charmilles. Geneva.
IngenVetensAkad. Handl.	Ingeniörsvetenskapsakademiens Handlingar. Stockholm.
*IngenVidensk. Skr.	Ingeniørvidenskabelige Skrifter. Copenhagen.
Inst. Fuel Bull.	Institute of Fuel Bulletin. London.
*Instruments	Instruments. Pittsburgh.
*Iron Age	Iron Age. New York.
*Iron Coal Tr. Rev.	Iron and Coal Trades Review. London.
*Iron and Steel	Iron and Steel. Chicago.
*Iron Steel Engr	Iron and Steel Engineer. Pittsburgh.
Izv. Uzbekistan Branch Acad. Sci. USSR	Izvestia of the Uzbekistan Branch of the Academy of Sciences of the USSR. Tashkent.
†J. Acoust. Soc. Amer.	Journal of the Acoustical Society of America. New York.
*J. Amer. Ceram. Soc.	Journal of the American Ceramic Society. Easton, Pa.
J .Amer. Chem. Soc.	Journal of the American Chemical Society. Easton, Pa.
J. Appl. Mech.	Journal of Applied Mechanics. New York.
†J. Appl. Phys.	Journal of Applied Physics. New York.
*J. Bact.	Journal of Bacteriology. Baltimore, Md.
J. Brit. Instn Radio Engrs	Journal of the British Institute of Radio Engineers. London.
J. Chem. Phys.	Journal of Chemical Physics. New York.
J. Chem. Soc.	Journal of the Chemical Society. London.
J. Electrodepos. Tech. Soc.	Journal of the Electrodepositors' Technical Society. London.
*J. Exp. Med.	Journal of Experimental Medicine. New York.
*J. Exp. Psychol.	Journal of Experimental Psychology. Evanston, Ill.
J. Franklin Inst.	Journal of the Franklin Institute of the State of Pennsylvania. Lancaster and Philadelphia, Pa.
*J. Gen. Physiol.	Journal of General Physiology. Baltimore, Md.
J. Inst. Fuel	Journal of the Institute of Fuel. London.
J. Inst. Met.	Journal of the Institute of Metals. London.
J. Inst. Petrol.	Journal of the Institute of Petroleum. London.
J. Instn Auto. Engrs	Journal of the Institution of Automobile Engineers. London.
J. Instn Civ. Engrs	Journal of the Institution of Civil Engineers. London.
†J. Instn Elect. Engrs	Journal of the Institution of Electrical Engineers. London.
J. Instn Engrs, Aust.	Journal of the Institution of Engineers, Australia. Sydney.
J. Instn Mech. Engrs, Lond.	Journal and Proceedings of the Institution of Mechanical Engineers. London.
*JIOA (H.M. Station. Off.; U.S. Dep. Comm.)	Joint Intelligence Objectives Agency. H.M. Stationery Office, London; U.S. Department of Commerce. Washington, D.C.
J. Iron Steel Inst.	Journal of the Iron and Steel Institute. London.
J. Jr. Instn Engrs	Journal of the Junior Institution of Engineers. London.
*J. Lab. Clin. Med.	Journal of Laboratory and Clinical Medicine. St. Louis, Mo.
J. Math. Phys.	Journal of Mathematics and Physics. Cambridge, Mass.
J. Met.	Journal of Meteorology. Lancaster, Pa.
†J. Opt. Soc. Amer.	Journal of the Optical Society of America. New York.
J. Phys. Chem.	Journal of Physical Chemistry. Baltimore, Md., and London.
J. Phys., USSR.	Journal of Physics. Moscow.
*J. Physiol.	Journal of Physiology. London and Cambridge.
*J.R. Aero Soc.	Journal of the Royal Aeronautical Society. London.
J.R. Astr. Soc. Can.	Journal of the Royal Astronomical Society of Canada. Toronto.
J.R. Soc. Arts	Journal of the Royal Society of Arts. London.
J. Radiol. Électrol.	Journal de Radiologie et d'Électrologie. Paris.
J. Res. Nat. Bur. Stand., Wash.	Journal of Research of the National Bureau of Standards. Washington, D.C.
†J. Sci. Instrum.	Journal of Scientific Instruments. London.
J. Soc. Chem. Ind., Lond.	Journal of the Society of Chemical Industry. London.
J. Soc. Dy. Col., Bradford	Journal of the Society of Dyers and Colourists. Bradford.
J. Soc. Glass Tech.	Journal of the Society of Glass Technology. Sheffield.
*J. Tech. Phys., USSR.	Journal of Technical Physics, USSR. Moscow.
*J. Télécommun.	Journal des Télécommunications. Berne.
J. Televis. Soc.	Journal of the Television Society. London.
J. Text. Inst., Manchr	Journal of the Textile Institute. Manchester.
J. Wash. Acad. Sci.	Journal of the Washington Academy of Sciences. Menasha, Wis.
K. Fysiogr. Sällsk. Lund, Förh.	Kungliga Fysiografiska Sällskapets i Lund Förhandlingar. Lund, Sweden.

*Lancet	Lancet. London.
Le Vide	Le Vide. Paris.
Light and Ltg	Light and Lighting. London.
L'Optique	*See* Rev. Opt. (Théor. Instrum.).
Lunds Univ. Årsskr.	Lunds Universitets Årsskrift. Lund, Sweden.
*Mach. Design	Machine Design. Cleveland, Ohio.
*Machinery, Lond.	Machinery. London.
*Machinist	Machinist. London.
*Marconi Rev.	Marconi Review. London.
*Mater. and Meth.	Materials and Methods. New York. (*Formerly* Metals and Alloys.)
Mech. Engng, N.Y.	Mechanical Engineering. New York.
*Mech. Handl.	Mechanical Handling. London.
*Mech. World	Mechanical World. Manchester and London.
Mem. Manchr. Lit. Phil. Soc.	Memoirs and Proceedings of the Manchester Literary and Philosophical Society. Manchester.
Mem. Soc. R. Belge Ingén. Industr. B.	Mémoires de la Société Belge des Ingénieurs et des Industriels. Brussels.
*Met. Ann.	Meteorologiske Annaler. Oslo.
*Metal Ind., Lond.	Metal Industry. London.
*Metal Progr.	Metal Progress. Cleveland, Ohio.
*Metallurgia, Manchr	Metallurgia. Manchester.
*Metals and Alloys	Metals and Alloys. New York. (*Now* Mater. and Meth.)
*Metals Tech.	Metals Technology. New York.
Metrop.-Vick. Gaz.	Metropolitan-Vickers Gazette. Manchester.
Min. Elect. Mech. Engr	Mining Electrical and Mechanical Engineer. Manchester.
*Mine Quarry Engng	Mine and Quarry Engineering. London.
*Miner. Soc. Amer. J.	Mineralogical Society of America Journal. (*See* Amer. Min.)
*Miners' Circ., Wash.	Miners' Circular. The United States Department of the Interior. Washington, D.C.
Mines Mag.	Mines Magazine. Denver, Col.
Misc. Publ. U.S. Bur. Stand.	Miscellaneous Publications of the National Bureau of Standards. Washington, D.C.
Mitt. Aargau. Naturf. Ges.	Mitteilungen der Aargauischen Naturforschenden Gesellschaft. Aarau.
*Mod. Plast.	Modern Plastics. New York.
Mod. Refrig.	Modern Refrigeration. London.
Mon. Not. R. Astr. Soc.	Monthly Notices of the Royal Astronomical Society. London.
Mon. Not. R. Astr. Soc., Geophys. Suppl.	Monthly Notices of the Royal Astronomical Society, Geophysical Supplement. London.
Mot. Ship	Motor Ship. London.
Nach. Wiss. Göttingen	Nachrichten von der Gesellschaft der Wissenschaften zu Göttingen. Göttingen, Germany.
Nature, Lond.	Nature. London.
Naturwissenschaften	Naturwissenschaften. Berlin.
New Engl. J. Med.	New England Journal of Medicine. Boston, Mass., U.S.A.
Nuovo Cim.	Il Nuovo Cimento. Bologna.
N.Z. J. Sci. Tech.	New Zealand Journal of Science and Technology. Wellington.
Observatory	Observatory. London.
Oil Gas J.	Oil and Gas Journal. Tulsa, Okla, U.S.A.
Onde Élect.	Onde Électrique. Paris.
Pap. Instn Post Off. Elect. Engrs	The Institution of Post Office Electrical Engineers, Printed Papers. London.
Paper Mkr., Lond.	Paper Maker. London.
Paper Tr. J.	Paper Trade Journal. New York and Chicago.
Phil. Mag.	The London, Edinburgh and Dublin Philosophical Magazine and Journal of Science. London.
Philos. Trans.	Philosophical Transactions of the Royal Society of London. London.
Photogr. J.	Photographic Journal. London.
Phys. Rev.	The Physical Review. New York.
Phys. Z.	Physikalische Zeitschrift. Leipzig.
Physica, 's Grav.	Physica, 's Gravenhage. The Hague.
Phytopathology	Phytopathology, Ithaca.
Plant Physiol.	Plant Physiology. Lancaster, Pa.
Plastics	Plastics. Washington, D.C.
P.O. Elect. Engrs' J.	The Post Office Electrical Engineers' Journal. London.
Portugaliae Mathematica	Portugaliae Mathematica. Lisbon.
Portugaliae Physica	Portugaliae Physica. Lisbon.
Power	Power. New York and London.
Prak. Wiss.	Praktisches Wissen. Graz, Austria.
Proc. Amer. Acad. Arts Sci.	Proceedings of the American Academy of Arts and Sciences. Boston, Mass.
Proc. Amer. Phil. Soc.	Proceedings of the American Philosophical Society. Philadelpahi, Pa.
Proc. Amer. Soc. Test. Mater.	Proceedings of the American Society for Testing Materials. Philadelphia, Pa.
Proc. Camb. Phil. Soc.	Proceedings of the Cambridge Philosophical Society. London.
Proc. Indian Acad. Sci.	Proceedings of the Indian Academy of Sciences. Bangalore.
Proc. Indian Ass. Cult. Sci.	Proceedings of the Indian Association for the Cultivation of Science. Calcutta.
Proc. Inst. Radio Engrs, N.Y. Wav. Electrons	Proceedings of the Institute of Radio Engineers and Waves and Electrons. New York.
Proc. Instn Mech. Engrs	Proceedings of the Institution of Mechanical Engineers. London.
Proc. Instn Radio Engrs, Aust.	Proceedings of the Institution of Radio Engineers, Australia. Sydney.
Proc. K. Ned. Akad. Wet.	Proceedings of the Koninklijke Nederlandsche Akademie van Wetenschappen. Amsterdam.

Proc. Leeds Phil. Lit. Soc.	Proceedings of the Leeds Philosophical and Literary Society. Leeds.
Proc. Nat. Acad. Sci., Wash.	Proceedings of the National Academy of Sciences. Washington, D.C.
†Proc. Phys. Soc., Lond.	Proceedings of the Physical Society. London.
Proc. R. Irish Acad.	Proceedings of the Royal Irish Academy. Dublin and London.
Proc. Roy. Instn	Proceedings of the Royal Institution of Great Britain. London.
†Proc. Roy. Soc.	Proceedings of the Royal Society of London. London.
Proc. Roy. Soc. Edinb.	Proceedings of the Royal Society of Edinburgh. Edinburgh and London.
Proc. Roy. Soc. Vict.	Proceedings of the Royal Society of Victoria. Melbourne.
Proc. Univ. Durham Phil. Soc.	Proceedings of the University of Durham Philosophical Society. Newcastle upon Tyne.
*Prod. Engng	Product Engineering. New York.
Publ. Astr. Soc. Pacif.	Publications of the Astronomical Society of the Pacific. San Francisco.
Publ. Fac. Cienc. Fís.-Mat. La Plata	Publicaciones de la Facultad de Ciencias Físico-Matemáticas de la Universidad Nacional de la Plata. La Plata.
*Publ. Kirkwood Obs. Ind.	Publications of the Kirkwood Observatory of Indiana University. Bloomington, Indiana.
*Publ. Moscow State Univ.	Publications of Moscow State University, Moscow.
*Pulp. Pap. Mag. Can.	Pulp and Paper Magazine of Canada. Montreal.
*Pwr Plant (Engng)	Power Plant Engineering. Chicago.
*Pwr Transm., Chicago	Power Transmission. Chicago.
Quart. Appl. Math.	Quarterly of Applied Mathematics. Providence, R.I.
Quart. J. R. Met. Soc.	Quarterly Journal of the Royal Meteorological Society. London.
Radio News	Radio News. Chicago.
Radio-Electronic Engng	Radio-Electronic Engineering. Chicago.
Radiography	Radiography. London.
Radiology	Radiology. Syracuse, N.Y.
*Radiotekhnika	Radiotekhnika. Moscow.
RCA Rev.	RCA Review. Princeton, N.J.
Rec. Trav. Chim. Pays. Bas.	Receuil des Travaux Chimiques des Pays-Bas. Amsterdam.
†Rep. Brit. Elect. Allied Industr. Res. Ass.	Reports of the British Electrical and Allied Industries Research Association. London.
Rep. Phys. Soc. Progr. Phys.	Reports of the Physical Society on Progress in Physics. London.
Repr. Univ. Ill. Engng Exp. Sta.	Reprint Series of the University of Illinois Engineering Experiment Station. Urbana, Ill.
*Rev. Gén. Chem.-de-Fer.	Revue Générale des Chemins de Fer et des Tramways. Paris.
Rev. Gén. Élect.	Revue Générale d'Électricité. Paris.
Rev. Métall.	Revue de Métallurgie. Paris.
Rev. Mod. Phys.	Reviews of Modern Physics. New York.
Rev. Opt. (Théor. Instrum.)	Revue d'Optique (Théorique et Instrumentale). Paris.
†Rev. Sci. Instrum.	Review of Scientific Instruments. New York.
Rev. Sci., Paris	Revue Scientifique. Paris.
Ric. Sci. Ricostruz.	Ricerca Scientifica e Ricostruzione. Rome.
*Rly Age	Railway Age. Chicago.
*Rly Engng Maint.	Railway Engineering and Maintenance. Chicago.
*Rly Gaz., Lond.	Railway Gazette. London.
*Rly Mech. Engr	Railway Mechanical Engineer. New York.
*Rly Signaling	Railway Signaling. Chicago.
S.B. Akad. Wiss. Wien.	Sitzungsberichte der Akademie der Wissenschaften in Wien. Vienna.
Schweiz. Arch. angew. Wiss. Tech.	Schweizer Archiv für angewandte Wissenschaft und Technik. Solothurn, Switzerland.
Schweiz. Bauztg	Schweizerische Bauzeitung. Zürich.
*Sci. Amer.	Scientific American. New York.
Sci. and Cult.	Science and Culture. Calcutta.
Sci. Proc.. R. Dublin Soc.	Scientific Proceedings of the Royal Dublin Society. Dublin and London.
Science	Science. Lancaster, Pa.
*Sheet Metal Industr.	Sheet Metal Industries. London.
*Shipbuilder	Shipbuilder. Newcastle upon Tyne.
*Silk J. and Rayon World	Silk Journal and Rayon World. Manchester.
Sky and Telescope	Sky and Telescope. Cambridge, Mass.
Spec. Publ. U.S. Cst Geod. Surv.	Special Publications of the Coast and Geodetic Survey. Washington, D.C.
*Steel	Steel. Cleveland, Ohio.
Stockholms Obs. Ann.	Stockholms Observatoriums Annaler. Stockholm.
Strowger J.	Strowger Journal. Liverpool.
Students' Quart. J. Instn Elect. Engrs	Students' Quarterly Journal of the Institution of Electrical Engineers. London.
Svenska VattenkrFören. Publ.	Svenska Vattenkraftföreningens Publikationer. Stockholm.
*Swiss Tech.	Swiss Technics. Lausanne.
*Tech. Mitt. Schweiz. Telegr.-TelephVerw.	Technische Mitteilungen der Schweizerischen Telegraphen-und Telephon-Verwaltung. Berne.
Tech. Pap. U.S. Bur. Min.	Technical Papers of the United States Bureau of Mines. Washington, D.C.
*Técnica	Técnica. Lisbon.
Tekn. Tidskr.	Teknisk Tidskrift. Stockholm.
*Telecommun. J. Aust.	Telecommunication Journal of Australia. Melbourne.
*Telegr.- Fernspr.- Funk.- u. Fernsehtech. [TFT]	Telegraphen- Fernsprech- Funk- und Fernsehtechnik. Berlin.
*Telegr. Teleph. Age	Telegraph and Telephone Age. New York.
*Teleph. Engr Mgmt	Telephone Engineer and Management. Chicago.
*Telephony.	Telephony. Chicago.

Terr. Magn. Atmos. Elect.	Terrestrial Magnetism and Atmospheric Electricity. Baltimore, Md.
*Text. Mfr, Manchr	Textile Manufacturer. Manchester.
*Text. Rec.	Textile Recorder. Manchester.
*Text. World	Textile World. New York.
Tijdschr. Ned. Radiogenoot.	Tijdschrift van het Nederlandsch Radiogenootschap. Baarn, Holland.
*Tin	Tin. London.
†Trans. Amer. Inst. Elect. Engrs	Transactions of the American Institute of Electrical Engineers. New York.
Trans. Amer. Phil. Soc.	Transactions of the American Philosophical Society. Philadelphia.
Trans. Amer. Soc. Mech. Engrs	Transactions of the American Society of Mechanical Engineers. New York.
*Trans. Amer. Soc. Met.	Transactions of the American Society for Metals. Cleveland, Ohio.
Trans. Chalmers Univ. Tech. Gothenburg	Transactions of the Chalmers University of Technology. Gothenburg.
Trans. Electrochem. Soc.	Transactions of the Electrochemical Society. New York.
Trans. Faraday Soc.	Transactions of the Faraday Society. London.
Trans. Illum. Engng Soc., Lond.	Transactions of the Illuminating Engineering Society. London.
Trans. Inst. Mar. Engrs	Transactions of the Institute of Marine Engineers. London.
Trans. Inst. Plast. Ind.	Transactions of the Institute of Plastic Industry. London.
Trans. Inst. Weld.	Transactions of the Institute of Welding. London.
Trans. Instn Engrs Shipb. Scot.	Transactions of the Institution of Engineers and Shipbuilders in Scotland. Glasgow.
Trans. Instn Nav. Archit., Lond.	Transactions of the Institution of Naval Architects. London.
Trans. N.-E. Cst Instn Engrs Shipb.	Transactions of the North-East Coast Institution of Engineers and Shipbuilders. Newcastle upon Tyne.
Trans. N.Y. Acad. Sci.	Transactions of the New York Academy of Sciences. New York.
Trans. Roy. Soc. Can.	Transactions of the Royal Society of Canada. Ottawa.
Trans. Roy. Soc. Edinb.	Transactions of the Royal Society of Edinburgh. Edinburgh and London.
Trans. S. Afr. Inst. Elect. Engrs	Transactions of the South African Institute of Electrical Engineers. Johannesburg.
*Transp. World	Transport World. London.
*Univ. Lund (Thesis Phys. Inst.)	University of Lund. Thesis of the Physics Institute. Lund, Sweden.
Univ. Stockholm (Inaug. Diss)	University of Stockholm, Inaugural Dissertation. Stockholm.
Versl. Ned. Akad. Wet. Afd. Natuurk.	Verslag van de Gewone Vergadering der Afdeeling Natuurkunde. Amsterdam. (*See also* Proc. K. Ned. Akad. Wet.)
*Vestn. Akad. Nauk USSR	Vestnik Akademie Nauk USSR. Moscow.
Vestn. Elektropromm.	Vestnik Elektropromm ishlennosti. Moscow.
Vestn. Svyazi	Vestnik Svyazi. Moscow.
*War Emerg. Brit. Stand.	War Emergency British Standards. London.
Waves and Electrons	*See* Proc. Inst. Radio. Engrs, N.Y. Wav. Electrons.
*Weld. Engr	Welding Engineer. Chicago.
*Welder	Welder. London.
*Welding	Welding. Pittsburgh.
Westingho. Engr	The Westinghouse Engineer. East Pittsburgh, Pa.
†Wireless Engr	Wireless Engineer. London.
Wireless World	Wireless World. London.
*Wiss. Veröff. Siemens-Werk.	Wissenschaftliche Veröffentlichungen aus den Siemens-Werken. Berlin.
*Z. Naturforsch.	Zeitschrift für Naturforschung. Wiesbaden, Germany.
Z. Phys.	Zeitschrift für Physik. Berlin.
*Z. techn. Phys.	Zeitschrift für technische Physik. Leipzig.
Z. Ver. dtsch. Ing. [VDI]	Zeitschrift des Vereines deutscher Ingenieure. Berlin.
*Zellwolle, Kunstseide.	Zellwolle. Kunstseide. Berlin.

ERRATA

Page 35, line 25, column 2: *delete* 612.85 : 543.773.
Abstr. 233, line 2: *for* "of . . . and . . . stilbene" *read* "of α- and β-stilbene."
Abstr. 374: *see* Rev. Mod. Phys., **18,** 148–9 (Jan., 1946).
Abstr. 399: *see* J. Phys. Chem., **50** (March, 1946).
Abstr. 445: *see* Phys. Rev., **69,** 31 (Jan. 1 and 15, 1946).
Abstr. 862, line 1: *for* Berquist, T., *read* Bergkvist, T.
Abstr. 1143, line 4: *for* 335 *read* 535.
Abstr. 1163: *for* 551.018.9 *read* 551.46.018.9.
Abstr. 1223: *see* C.R. Acad. Sci., Paris, **222,** 252 (Jan. 21, 1946).
Abstr. 1323, line 2: *for* 1620 (1945) *read* 1620 (1944).
Abstr. 1365, line 8: *for* 3072 (1946) *read* 3072 (1945).
Abstr. 1455, line 4: *for* 85 *read* 35.
Abstr. 1533: *see* Rev. Sci. Instrum., **17,** 199 (May, 1946).
Abstr. 1631, line 2: *for* Barendrecht, F., *read* Barendregt, F.
Abstr. 1667, line 2: *for* Duferier, A., *read* Duperier, A.
Abstr. 1719: *for* 541.575 *read* 541.571.5.
Abstr. 1926: *see* Phys. Rev., **69,** 673 (June 1 and 15, 1946).
Abstr. 2071: *see* Rev. Opt. (Théor. Instrum.), **24,** 38 (Jan.–March, 1946).
Abstr. 2188, line 2: *for* Wyckoff, R. W. C., *read* Wyckoff, R. W. G.
Abstr. 2294, line 3: *for* 23 *read* 341.
Abstr. 2812, line 6: *for* $(c_p/c_v)_p = 0$ *read* $(c_p/c_v)_p = 0$.
Abstr. 2890, line 4: *for* Ogg, R. A., *read* Ogg, R. A., Jr.

ABSTRACTORS

G. E. Allan, D.Sc.
C. B. Allsopp, M.A., Ph.D.
W. R. Angus, M.A., D.Sc., Ph.D., F.R.I.C.
G. O. Baines, M.A., Ph.D., F.Inst.P.
E. H. W. Banner, M.Sc., M.I.E.E., F.Inst.P.
A. Beer, Ph.D.
N. M. Bligh, A.R.C.S., A.I.C.
C. F. Brockelsby, B.Sc., A.R.C.S.
B. C. Browne, M.A.
W. W. Campbell, B.Sc., A.M.I.E.E.
L. G. Carpenter, B.A., B.Sc.
L. J. C. Connell, B.Sc., A.Inst.P.
N. Corcoran, M.Sc.Tech., B.A., M.Sc., A.Inst.P.
T. G. Cowling, M.A., D.Phil.
R. Davis, B.Sc., M.Sc., A.M.I.E.E.
E. H. Dock, M.Sc., A.R.C.S., F.Inst.P.
W. E. Duncanson, M.Sc., Ph.D., D.Sc.
D. L. Edwards, A.R.C.S., D.I.C., F.R.A.S.
D. S. Evans, M.A., Ph.D., F.Inst.P.
A. Everett, M.A., Ass.Brit.I.R.E.
F. T. Farmer, B.Sc.(Eng.), Ph.D., A.M.I.E.E., F.Inst.P.
V. C. A. Ferraro, B.Sc., Ph.D., F.R.A.S.
J. C. Finlay.
L. B. Firnberg, B.Sc.(Eng.), A.C.G.I.
G. F. Freeman, B.Sc., M.Sc.(Eng.), M.I.E.E., A.M.I.Mech.E.
A. G. Gaydon, D.Sc., Ph.D.
L. S. Goddard, B.Sc.
R. H. Golde, Dipl.Ing., A.M.I.E.E., A.Am.I.E.E.
C. J. Golledge, F.R.E.S.
J. Grant, B.Sc., M.Sc., Ph.D., F.R.I.C.
S. J. Gregg, B.Sc., Ph.D., A.R.C.S.
E. D. Hart, M.A., M.I.R.E.
A. Harvey, Ph.D., B.Sc., F.Inst.P.
S. T. Henderson, M.A., B.Sc., F.R.I.C., F.Inst.P.
H. K. Henisch, B.Sc.
H. H. Hodgson, Ph.D., M.A., B.Sc., F.R.I.C.
G. F. Hodsman, B.Sc.
H. H. Hopkins, B.Sc., Ph.D., F.Inst.P.
A. Hunter, Ph.D., D.I.C., F.R.A.S.
R. G. Jakeman, D.Sc., M.I.E.E.
G. J. Kynch, D.I.C., Ph.D.
F. Llewellyn Jones, M.A., D.Phil., F.Inst.P.
A. Landman, Dipl.Ing., A.M.I.E.E., A.M.I.R.E.
D. E. Lea, M.A., Ph.D.
B. J. Leggett, M.R.C.S., L.R.C.P., M.I.E.E.
S. K. Lewer, B.Sc.
G. C. McVittie, M.A., Ph.D., F.R.A.S.
R. Matthews.
E. G. Martin, F.R.A.S.
A. J. Mee, M.A., B.Sc.
H. Miller, M.A., Ph.D., F.Inst.P.
R. E. Neale, B.Sc., A.C.G.I., A.M.I.E.E.
R. Neumann, Dipl.Ing.
A. P. Paton, B.Sc., A.M.I.E.E., A.M.I.Mech.E.
R. W. Powell, D.Sc., Ph.D., F.Inst.P.
R. S. Read, M.A., B.Sc., A.R.C.S., F.Inst.P.
T. J. Rehfisch, B.Sc.(Eng.).
W. A. Richardson, M.Sc., D.Sc., B.Sc.(Eng.), F.G.S.
J. E. Roberts, Ph.D., D.Sc., F.Inst.P.
W. Ruschin, B.Sc.(Eng.).
S. Silbermann, Dipl.Ing., A.M.I.E.E.
H. O. Smerd, M.Eng.
H. G. Solomon, A.C.G.I., M.I.E.E.
H. J. H. Starks, B.Sc., Ph.D., D.I.C.
E. O. Taylor, B.Sc., A.M.I.E.E., D.I.C., A.C.G.I., F.R.S.E.
J. Thewlis, D.Sc., F.Inst.P.
A. M. Thomas, B.Sc., F.Inst.P., A.M.I.E.E.
J. S. G. Thomas, D.Sc., A.R.C.S., F.R.I.C.
J. W. T. Walsh, M.A., D.Sc., M.I.E.E.
A. C. Whiffin, B.Sc., M.Sc.(Eng.).
J. A. Wilcken, B.Sc., Ph.D.
A. Wilkinson, B.Sc.
W. E. Willshaw, M.Sc.Tech., A.M.I.E.E.
A. J. C. Wilson, M.Sc., Ph.D., F.Inst.P., A.I.M.
A. B. Wood, D.Sc., F.Inst.P.

Editor:
B. M. Crowther, M.A., Ph.D., F.Inst.P.

Assistant Editor:
G. N. J. Beck, B.Sc., A.Inst.P.

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NOTE ON THE UNIVERSAL DECIMAL CLASSIFICATION SYSTEM

The complete Tables of the 4th International Edition of the Universal Decimal Classification, used in *Science Abstracts*, are in process of publication by the British Standards Institution as B.S. 1000. The following brief notes, published with the permission of the Fédération Internationale de Documentation (F.I.D.) and of the B.S.I., may serve as a preliminary guide for readers.

The system is based on the conception of the whole of human knowledge as unity, divided into ten domains represented by decimal fractions:

.0	Generalities
.1	Philosophy
.2	Religion
.3	Social sciences
.4	Philology
.5	Pure science
.6	Applied science
.7	Art
.8	Literature
.9	History and geography

On this foundation the system is constructed on the principle of proceeding from the general to the more particular by continued subdivision of the numbers into decimal fractions.

Thus every concept within the domain of Pure Science is represented by a decimal fraction greater than .5 and less than .6, the first groups being

.50	General works on pure science
.51	Mathematics
.52	Astronomy
.53	Physics
.54	Chemistry. Crystallography
.55	Geophysics
.56	Palaeontology
.57	Biology
.58	Botany
.59	Zoology

For convenience the first decimal point is always omitted, but it is essential that it should remain imprinted on the reader's mind. The fact that all the numbers are in reality decimal fractions less than unity determines the arrangement of the numbers in numerical sequence. Thus 526 (meaning .526) precedes 53 (meaning .53) in ascending order.

To indicate a work dealing with two or more subjects independently, the numbers corresponding to these subjects are connected by + signs. Thus

531.754 + 536.62	Measurement of density and of specific heat

More important, and more widely used, is the symbol denoting some functional relation between two or more concepts, expressed by the respective numbers linked by the colon sign " : "

Thus

537.531	X-rays
535.4	Diffraction
548.0	Crystals
537.531 : 535.4 : 548.0	X-ray diffraction by crystals

Further symbols, for the use of which the reader is referred to B.S. 1000, Vol. 1, Part 1, may be used for indicating form, place, language, etc., e.g.

historical:	538.7(09)	Early geomagnetic instruments
place:	551.524.2(73)	Temperature maps of the United States
language:	548.55 = 3	Monocrystalline tungsten wires (in German)

The arrangement in each monthly issue is numerical, according to the U.D.C. numbers. Cross-references, indicated by compound numbers linked by the colon symbol, are given in their proper places, according to each component number. Thus abstracts with compound indices such as

537.531 : 535.4 : 548.0	X-ray diffraction by crystals

are given under 537.531 X-rays, and quoted again under 535.4 Diffraction, and 548.0 Crystals, so that the subject of the abstract is indicated to the searcher in every one of the three fields.

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